THE MOTOR AGE

THE AUTOMOBILE AUTHORITY OF AMERICA

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THE REAL INVENTOR OF THE AUTOMOBILE

Paris, Aug. 9.—Gottleib Daimler has generally been given the honor of being the inventor of the automobile, but his claims to this distinction have been vigorously disputed, and, it would seem, with excellent reasons.

Some time ago Austria, who is keeping pace with the van of automobilism, set claim to the distinction of having the real inventor of the horseless vehicle, in the person of Seigfreid Marcus, of Vienna, who, it was proved, had built and operated a motor-vehicle in Vienna in 1877.

The result of the discussion that was aroused in France by this claim, led the Automobile Club de France to appoint a commission composed of MM. Jeantaud, Forestier and Walckenaer, to investigate and report on the matter. The report has recently been made public and announces most decisively that the hon-

or of the inventor of the automobile belongs to France instead of to either Germany or Austria.

But a few days ago there died at La Varenne-Chennevieres, near Paris, at the advanced age of seventy-eight years, Etienne Lenoir, who, according to the report of the commission, took out a patent for a hydrocarbon engine and for its application to an automobile on January 24, 1860. The patent is numbered 43,624. The report of the commission quotes from the patent the following:

"My invention consists, first, in the use of ordinary gas in combination with air and ignited by electricity, as a motive force, and, secondly, in the construction of an engine designed to use this gas."

A description of the engine follows. It is similar to a horizontal steam engine, with two valves for the admission of the carburetted air. Further on in his patent Lenoir says: "What I especially desire to patent is the arrangement by which the gas and air enter the cylinder and the means of igniting the mixture by means of two insulated platinum wires, communicating with a Rhumkoff coil, which, itself, communicates with a producer of electricity."

The patent then explains, in detail, the working of his engine. Later the inventor says: "I may employ other kinds of gas than the ordinary illuminating gas, as, for example, bicarbonated gas, or I may procure gas at the moment of use by employing hydrocarbon liquids, or, again, I may utilize pure hydrogen gas or sulphuretted gas, and, in general, any gas capable of ignition in a cylinder, in connection with oxygen. I may also make my engine vertical or balanced. Finally, I desire the exclusive right to use gas and air in a cylinder, drawn in by the suction of a piston of any kind, and ignited at will."

Not only is Lenoir the inventor of the gas engine but he was the builder of the first automobile using a gas engine, for, in 1862, he built a vehicle which he equipped with a gas engine and made several trips from his shop in the Rue de la Roquette, in Paris, to Vincennes, where, at the very hour of his death, the great automobile section of the Exposition Universale is being visited by thousands. The proofs of the construction of this vehicle are given by two of the men whom Lenoir employed in its construction, as well as by other witnesses who saw it in operation. The names of the two employes are Goriot and Pinotot.

IMPRESSIONS FROM PARIS

Cleveland, Aug. 20.—N. A. Quilling, a well-known bicycle dealer, returned from Europe and the Paris exposition a few days ago and while abroad he devoted considerable attention to the subject of automobiles and motor cycles. While sharing in the popular belief that the first class of machines will rapidly come into general use in this country, Mr. Quilling is inclined to be pessimistic as to the chances for the sale of the smaller class of vehicle of the bicycle type. With certain classes they may meet with favor, but he feels confident that the mass of American riders, the business men, the ladies and the four hundred will not take favorably to these machines. In Paris these machines are used by people who like to attract attention. They tear through the streets at top speed and the more noise the machine makes, the better they seem to like it. The riders wear leather or other heavy clothes adapted only for such purposes and they make no objection to grease or dirt that would disgust an American. The majority of the French cycles have so much vibration that the average man can not ride for any great distance without feeling the effects of the jar. Mr. Quilling believes that the American people will be willing to pay a trifle more and secure a comfortable carriage that will seat two and that can be operated without grease and dust.

Of the automobiles at the Paris exposition, Mr. Quilling stated that the American electric machines attracted more attention than any others and were admitted, even by the French people, to be far superior to their own as regards finish and general appearance. The lines shown by the Riker Electric Vehicle Co. and the Cleveland Machine Screw Co. were constantly the center of attraction and all the samples were sold and many others contracted for. The majority were bought by French people. The brougham

built by the latter company was unquestionably the finest machine of the kind in the exhibition.

President A. L. Moore of the Cleveland Machine Screw Co., who also returned from Paris a short time ago, has much the same opinion regarding motor cycles. He does not believe they will become as popular in this country as they are in France. He said the American is cleanly above everything and he will not bother with a machine which is bound to make him unpresentable. The French people have nothing else to do and they do not mind a little extra trouble in cleaning up. A large number of American business men have stopped riding the bicycle because they could not ride to and from their business and keep a cool and unruffled appearance. A motor cycle cannot be made that will be perfectly clean and for that reason the majority of our people will prefer to pay a triffe more and secure a small carriage.

A LIVE PHILADELPHIA CLUB

Philadelphia, Aug. 20.—Notwithstanding the almost utter absence from the veins of its members of that ceruleanhued blood that is so often considered necessary in those who aspire to the ownership and management of automobiles, this city's infant organization, the Pennsylvania Automobile club, is already giving its older brother, the Automobile Club of Philadelphia, a few pointers as to how to impress the general public with a due sense of its standing in the community. Not content with promoting a series of weekly jaunts to points of interest within sixty or seventy-five miles of town, the Pennsylvanians are making preparations to break through the legal cordon which prevents automobilists from using many of the roads in Fairmount Park, the popular pleasure ground of us Quakers, mounted and unmounted. Constant agitation of the question—and not a meek acceptance of the decisions of the solons who make the laws for the park—will, so the Pennsylvanians believe, ultimately result in letting down the bars entirely, the only restriction being as to speed. In this connection the club at its last meeting discussed the advisability of limiting the speed of their machines while on club runs to ten miles an hour. Yesterday's run to Willow Grove was participated in by fifteen members. At tonight's regular monthly meeting half a dozen new members will be admitted. A committee has been appointed to arrange for a series of automobile races to be decided on the Belmont Driving Park track some time next month.

GASOLENE ON FERRIES

New York, Aug. 20.—President Chamberlin, of the Automobile Club of America, is overrun with correspondence from all over the country on the question of the United States laws in reference to the carrying of gasolene on vessels plying on waters inside government jurisdiction. It has been held that a gasolene vehicle violates this prohibition. Mr. Chamberlin has been in correspondence with the Secretary of the Treasury with a view to securing some moderation of the application of the law and the establishment of special regulations for vehicles employing gasolene for motive power or fuel. He says, however, that there is little chance of getting relief except through a special act of congress.

It might come within the province of the new hydrocarbon association to use its efforts and influence in this direction.

ONE-HOUR MOTOCYCLE CHAMPIONSHIP

Paris, Aug. 9.—The motocycle-tricycle championship for one hour was run at Lille on the fifth inst. The starters were Beconnais, Fossier, Demester, Vasseur, Loste, Cabaillot, Bathiat, and Louis. At the sound of the pistol Bathiat jumped into the lead, which, however, he held for only a few laps, being passed by Beconnais, who was never thereafter headed. At ten kilometers, ridden in 10:30, Beconnais had lapped his opponents. Demester was second and Loste third at this point, but at eleven kilometers the latter was obliged to make a momentary stop owing to an accident. At fourteen kilometers Vasseur had a breakdown and was forced to quit. At nineteen kilometers Bathiat's tire ex-

ploded and he was forced to resort to another machine. Beconnais finished the twenty kilometers in 20:30 with Demester second, a lap behind but riding neck and neck with the leader. Before thirty kilometers had been ridden, however, Beconnais had gained another lap and passed the thirty kilometer mark in 30:34 2-5. Soon after this Fossier was obliged to quit on account of a break in his machine. A little further on, the ignition tube in Demester's motor broke and he was obliged to replace it. After a number of other accidents, among which Beconnais was the only one to escape, the race was finished. The forty kilometers were ridden in 41:45 and the fifty in 52:36 3-5. At the end of the hour Beconnais had covered 57½ kilometers, nearly three kilometers ahead of Loste, who, in turn, was nearly a kilometer ahead of Demester.

NEW YORK CLUB NEWS

New York, Aug. 20.—With most of the members of the Automobile Club of America out of town there is little doing in club affairs. The few in town, however, are discussing the question of the location of new club rooms. It looks now as though the Astor Court idea would be abandoned in favor of the upper floors of the building occupied by the Plaza bank at Fifty-eighth Street and Fifth Avenue. This would be a fine location and convenient for the starting of the club runs. A storage place for vehicles can be obtained in the rear and the upper floors can be fitted up for club rooms with all the conveniences of a club in place of the mere meeting rooms forced to answer the purpose.

The problem of an exhibition of the vehicles of the members of the Automobile Club at the Madison Square Garden show has probably been settled by the suggestion that a parade of members' cars take place on the track each afternoon.

Chairman Field has called a meeting of the Technical Committee for Wednesday for the discussion of the 600-mile and the general tests to be promoted by the club in October or November. F. W. Tousey, one of the founders of the Automobile Club of Great Britain, is expected to arrive in this country within the next three weeks. He had much to do with arranging the program for the British 1,000-mile test run and the committee is expecting much valuable advisory assistance from him.

The members have just received the new club books.

TO TAKE UP TRICYCLE RACINC

New York, Aug. 20.—Racing men of the Automobile Club of America will probably go in for tricycle racing not a little this autumn. Tricycle races are on the programmes at the Inter State fair at Trenton and the Tri-State Fair at Guttenburg. Albert C. Bostwick's mysterious imported tricycle will doubtless figure prominently in the contests.

By the way, the manager of the Trenton automobile show has decided not to limit the contestants in the great club run, or more properly, race, to American makes. It is probable, however, that Bostwick's record holding de Knyeff car will not be in the run, but will be saved for the track races.

Henri Fournier, who acted as mechanic to Albert Bostwick in the great Perigeux race, is at present an employe of Charron. He has been on the Panhard cars in most of the great road races this season. He says he will return to this country in September. Fournier will doubtless be seen in many of the big automobile races here this autumn.

AN AUTOMOBILIST'S SURPRISE

A curious incident was witnessed immediately in front of the offices of The Motor Age a few days ago. The street is paved with vitrified brick at either side, while in the center are street car tracks, the portion of the street occupied by the tracks being paved with granite blocks. Both surfaces are fairly well worn. The result of the wear has been to increase the traction to be obtained on the brick surfaces and to decrease that on the granite blocks.

A heavy thunder shower had ceased but a few minutes before two automobilists came spinning down one side of the street in a Locomobile. They had evi-

dently forgotten that the legal speed is ten miles an hour, for they were going twice that fast. A big beer truck was ahead of them. Waiting until he was within twenty feet of the beer truck, the driver of the auto made a quick turn to cross the car tracks, the traction obtained on the bricks enabling him to do it. But when the wheels struck the granite blocks and car tracks, deluged with water, it was different. One of the front wheels took a rail while the other bumped along on the granite blocks, worn smooth, and slippery with the rain. The rear wheels followed. Despite the efforts of the driver, who proved to be a man of experience, the vehicle refused to leave the car tracks until it had slid along for at least 150 feet, and had been slowed down to about two miles an hour—for the driver had immediately closed the throttle and applied the brake.

Despite his experience in driving all over the country, he found a combination to which he was not accustomed.

The canton of Graunbunden, in Switzerland, has passed a law by which the operation of automobiles in the canton is prohibited.

INTER OCEAN TOURNAMENT BOOMING

The automobile exhibition and tournament of September 18 to 22, being promoted at Washington Park track, Chicago, by the Chicago Inter Ocean, shows all the signs of being a highly successful affairs. The promoters have worked diligently and effectively under circumstances that were not the most auspicious. The program that was originally announced has been completely revised, to more fully meet the ideas of the exhibitors. A considerable number of contracts for exhibition space have been signed and more signatures are promised in the near future. Business Manager Bowles of the daily furnished the following list of firms who have contracted for space:

List of Exhibitors

Chicago Motor Vehicle Co., Chicago.
Triumph Motor Vehicle Co., Chicago.
Crowdus Automobile Co., Chicago.
Gormully & Jeffery Branch of the American Bicycle Co., Chicago.
Waverly Branch of the American Bicycle Co., Indianapolis.
Hewitt-Lindstrom Motor Co., Chicago.
Canda Bros., Auto-Quadricycle Co., Chicago.
Woods Motor Vehicle Co., Chicago.
C. C. Hill Automobile Co., Chicago.
Locomobile Co. of America, New York.
De Dion-Bouton Motorette Co., New York.
Riker Motor Vehicle Co., Elizabethport, N. J.
Winton Motor Carriage Co., Cleveland.
E R. Thomas Motor Co., Buffalo.
World's Dispensary Automobile Co., Buffalo.
Hub Motor Co., Chicago.
Eastman Automobile Co., Cleveland.
Olds Motor Works, Detroit.
McMullen Power Co., Chicago.
Friedman Automobile Co., Chicago.
Kokomo Rubber Co., Kokomo, Ind.
Helios-Upton Co., Peabody, Mass.

Other Probable Exhibitors

In addition to those who have already contracted for space, there are a number of other firms, according to Mr. Bowles, who are almost sure to sign contracts for space within the next few days. Among them are the Mobile Co. of America, the American Electric Vehicle Co., the Anglo-American Rapid Vehicle Co., the Waltham Mfg. Co., the New York & Ohio Co., the Electric Vehicle Co., the Consolidated Motor Vehicle Co., Sipe & Sigler, the St. Louis Motor Carriage Co., the General Electric Co., and the Maryland Automobile Co.

The program of races, efficiency con-

tests, parades, trials, etc., has been revised and now finally stands as follows:

Tuesday, September 18

Grand parade for manufacturers—First prize, gold medal, for greatest number of practical designs; second prize, gold medal, for greatest number of autos in line; third prize, silver medal, for most practical and unique design.

One mile race, flying start, free for all—For steam automobile, first prize, gold medal; second prize, silver medal, for gasolene automobile, first prize, gold medal; second prize, silver medal; for electric automobile, first prize, gold medal; second prize, silver medal.

Obstacle race—Prize of a gold medal for best time in passing through obstacles.

Grand parade for private owners—Gold medal for most elegant turnout; gold medal for auto carrying greatest number of seated passengers.

Ten-mile race, free for all—First prize, gold medal, to winner; second prize, silver medal, to most dexterous operator; third prize, gold medal, to best appearing vehicle.

Fancy and trick driving contest (open to all types of vehicles)—Gold medal for most difficult tests and practical demonstration.

Fifty-mile race for motor tricycles—Cash prizes to first and second.

Wednesday, September 19

Manufacturers' practical utility test—Prizes, gold and silver medals.

Heavy draft contest for manufacturers and merchants—Prizes, gold and silver medals.

Auto-gun carriage demonstration for government use (open to all kinds of motive power)—First prize, gold medal; second prize, silver medal.

Ten-mile mail race—First prize, gold medal to manufacturer of mail wagon for best time in finishing and making forty mail box collections; second prize, $25 in gold to driver of prize-winning wagon; third prize, gold medal for most practical and best adapted wagon.

Pulling contest—One prize, gold medal, for best application for motive power of acetyline, alcohol, kerosene, compressed air, and liquid air.

Fifty-mile quadricycle race—Cash prizes, first and second.

Great automobile-equestrian race—Being an event in which a running horse will compete with an auto; prize, gold metal.

Pioneer contest—Prize, silver cup for oldest automobile, steam, gasolene, or electric power, to be exhibited.

Thursday, September 20

Grade-climbing tests—Automobiles will be tested, each in its class of motive power, for greatest percent grade climbed from still position, greatest percent of grade climbed from flying start, and test of speed climbing fifteen per cent grade, ten minutes' duration. Tests also on declines. Prizes, gold and silver medals.

One-hundred mile race—For manufacturers using carriages carrying four grown people; prize, silver medal.

One-hundred mile race—For private owners using carriage carrying two grown people; gold medal.

Five-mile ladies' race—Prize, silver cup.

Ten-mile ladies' race—Gold medal.

Ladies' obstacle race—Silver cup.

Three-mile merchandise delivery race—First prize, $50 in gold; second prize, $25 in gold.

Fifty-mile motor racing tandem races—Cash prizes.

Automobile manufacturers' congress at Wellington Hotel at 8 p. m.—Addresses of welcome, etc.

Friday, September 21

Ten-mile road race for vehicles carrying four people—Prize, silver cup.

Ten-mile road race for vehicles carrying two people—Silver medal.

Grand sweepstakes event for Inter Ocean challenge cup.

Five-hundred mile race, commencing at 5 a. m.

One-mile novelty race—Automobiles running backward. First prize, silver cup; second prize, silver medal. Entries limited, several heats if necessary.

Grand floral parade, 3 p. m.

Fifty-mile motor bicycle race—Prize, cash purse.

One-hundred-mile twentieth century race for motor tricycles, motor quadricycles, motor tandems, and motor bicycles—Cash purse.

Saturday, September 22

Ten-mile manufacturers' race for steam vehicles—First prize, silver cup; second prize, silver medal.

Ten-mile manufacturers' race for gasolene vehicles—First prize, silver cup; second prize, silver medal.

Ten-mile manufacturers' race for electric vehicles—First prize, silver cup; second prize, silver medal.

Twenty-mile combination race to respective winners of above ten-mile races—Gold medal.

Five-mile transfer express race—Prize, silver medal.

Fifty-mile consolation race for losers of twentieth century race—Cash prize.

Novelty design contest—Being a contest for designs in automobiles which will depart radically from the carriage type; prize, silver cup.

Gold medal prize for most original con-

ception in an automobile that will still leave the vehicle acceptable and practical.

Grand illuminated automobile parade, 8 p. m.; silver cup for most attractive display.

The amounts of the cash prizes have yet to be decided.

Details of Contests

In the obstacle races, the track will be prepared with dummy figures, representing men and women, trunks of trees, large stones and such other obstacles as might be met with in a trip across country or in the mazes of a big city. These contests are designed to show the efficiency of the drivers and the adaptability of the vehicles to crowded city traffic or country use.

In the utility tests, the practicability of the vehicles, in a mechanical way, will be shown. The tests will be for economy of power, speed, efficiency in hill climbing, mechanical construction, safety devices, accessibility and efficiency of brakes, ease of repair, noiselessness and other features affecting the general utility of the vehicles.

Ratio of Winning Points

In the utility contests the following ratio has been established for winning values:

	Points.
Ease of control, noiselessness, etc., to be determined by a two mile run	20
Carriage design and practicability	20
Arrangement of brakes and control of speed	20
Best hill climbing power	10
Best safety device for operating vehicle on grade or level	10
Best, simplest and most accessible mechanical construction	20

Points in Heavy Draft Contest

In the heavy draft contests the following ratio has been established:

	Points.
Construction	20
Best motive power	20
Carrying capacity	20
Design for practical utility	10
Control and manipulation	10
Safety and emergency devices	10
Power per ton mile—per ton mile to include weight of passengers as well as tare; cost of electricity, gasolene or oil to be based on current market rate of products	10

Success Seems Assured

The Motor Age was inclined, at first, to doubt the ability of the promoters to secure the attendance of a sufficient number of manufacturers to insure the success of the affair, from an exhibition standpoint, or to secure a sufficient number of competitors in the various contests, to make them thoroughly interesting. The foregoing list of firms who have contracted for space is sufficient, however, to insure a highly interesting exhibit and the fact that this number of representative makers will be on hand, is sufficient to guarantee the attendance of others who have not already signed for space.

Changes in the Programme

The various changes in the program make it fairer to the industry, as a whole, than it was in its original form, and the number of entries in the various contests is already sufficient to guarantee their being highly interesting to those in the industry, as well as amusing and instructive to the general public, on whom the manufacturers have to depend for support.

A Difficult Task

It is little wonder, that, to those who are familiar with the undeveloped state of the industry, the promotion of an exhibition on such mammoth proportions as that outlined by the Inter Ocean, should appear little short of an impossibility. But, as has been said, the newspaper people appear to have overcome the obstacles in the way of a successful exhibition, and the affair now promises to be of not only great interest, but of the greatest interest of any automobile event in the history of the industry of the United States.

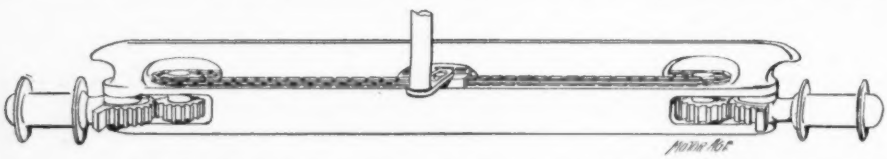
WEEKLY PATENT OFFICE BUDGET

INVENTIONS RELATING TO STEERING MECHANISMS, COMPLETE DRIVING GEARS, TIRES, TIRE FASTENING MEANS AND MECHANICAL TRACTORS

The patent description of a motor vehicle invented by E. E. Allyne and L. R. Pomeroy of Cleveland asserts that the chief cause for obnoxious odors developed by gasoline engines in operation is that such engines are almost invariably run at a very high speed and that consequently the gases are not afforded sufficient time for complete combustion. Accordingly the inventors have sought to alleviate this effect by removing the cause (high speed) and substituting for rapid motor shaft revolution a driving mechanism whereby the same eventual driving result is obtained. A full description of their invention is not given in the succeeding accounts of the week's patents because of the fact that although the vehicle is carefully worked out in detail in the patent sheets, the inventors have made numerous material changes in the mechanism since the patent application was filed and the construction of the vehicle in practice will be substantially different from that described in the patent specifications. The principles upon which the various factors of the mechanism operate will, of course, remain intact.

P. J. Collins of the Collins Electric Vehicle Co. of Scranton, Pa., contributes a steering mechanism whereby tendency on the part of the steering wheels to jump aimlessly in passing slight obstructions is obviated; John Liebau of New York city obtains patent rights for a three-wheeled motor truck which is adapted to be secured to front of any vehicle in the place of the regular front wheels and thus convert it into an automobile; F. G. Frankenberg has devised a sprocket and chain steering gear; F. J. Trench of Dublin, Ireland, is patentee of a method of securing pneumatic or other tires to wheel felloes, and three Hiltons and W. M. Merriman of Akron, O., are the concluding patentees of the week with a solid rubber vehicle tire.

The complete specifications, claims and drawings of any patents will be furnished by the patent office at Washington for five cents each. Persons sending for patents should address their letters "Commissioner of Patents, Washington, D. C.," and should enclose five cents for each copy of every patent desired, and should state the numbers and dates of the patents. Each patent described in The Motor Age is preceded by its number and date. The date of any patent described in earlier issues, in which dates were not given, can be ascertained by deducting nine days from the date of the paper in which it was described.



FRANKENBERG'S SPROCKET AND CHAIN STEERING DEVICE.

STEERS BY SPROCKETS AND CHAIN

Letters Patent No. 655,702, dated August 14, 1900, to Frederick G. Frankenberg, Chicago; driving and steering mechanism for motor vehicles. Four claims allowed.

The first part of this patent relates to a system of electric motor rear wheel drive which consists of two individual motors, each driving an independent rear wheel axle. The individual motors are not applied to assist in the accomplish-

ment of steering, but simply to act as a substitute for a differential gear in permitting the rear wheels to revolve independently when the vehicle is turning corners.

The second portion of the invention consists of a steering gear operated by sprockets and chain. The front wheels are on stub axles and to the vertical portion of each stub is secured a gear segment facing inwardly. This gear segment meshes with a small spur pinion whose shaft also bears a sprocket wheel. The sprocket wheel adjacent to the right wheel is connected by a chain to that adjacent to the left wheel.

A short bar is secured between the ends of the chain and the latter is so placed on the sprockets that this bar will be normally located midway between the sprocket centers and on the front run of the chain. The bar carries a short vertical pin which engages a slot in a horizontal crank arm on the lower extremity of the steering lever post. It is evident that when the steering lever is turned the slotted crank arm at the lower end will carry the chain bar to the right or to the left and cause a corresponding rotation of sprockets, gears and steering knuckles. This device swings both wheels in parallel planes, which is incorrect.

POWER CONTROLLING MECHANISM

Letters patent No. 655,749, dated August 14, 1900, to Edmund E. Allyne and Le Dru R. Pomeroy, Cleveland, O.; transmission, speed changing, reversing and braking mechanism. Twenty-eight claims allowed.

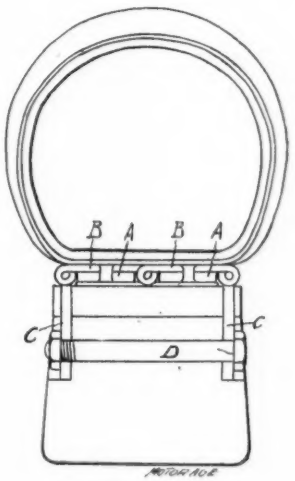
The invention comprises a driving mechanism whereby the traction wheels may be driven directly from the motor shaft through a series of spur gears or through a speed changing device which is an adaptation of the reversed cone with intervening shiftable ring system. The series of shifting mechanisms employed are so connected in their operation that the control of the vehicle may be accomplished almost entirely with the steering lever and with a reversing lever.

The Van Wagoner & Williams Hardware Co. of Cleveland, which is now supplying the trade with castings and other specialties for automobile manufacture, is interested in the development of this vehicle.

TRENCH'S TIRE FASTENING

Letters patent No. 656,060, dated August 14, 1900, to Frederick J. Trench of Dublin, Ireland; means for securing resilient tires to wheel rims. Four claims allowed.

If the fastening device which is the subject of this invention is used in connection with a pneumatic there are secured in the rim side of the tire a pair of endless annular steel bands A to which are riveted at equal distances around the tire a series of yokes B B. The two



Trench Tire Fastening.

yokes forming a pair are hinged together at the center of the tire and at the outer edge of each a hinge connection is formed with a flap C, adapted to lie against the side of the wooden rim or felly of the wheel. A cross bolt D holds both flaps of each pair securely in place.

In a modification of this construction the flaps C are formed integrally with the yokes B, C and B being simply made in the shape of a right angle clip.

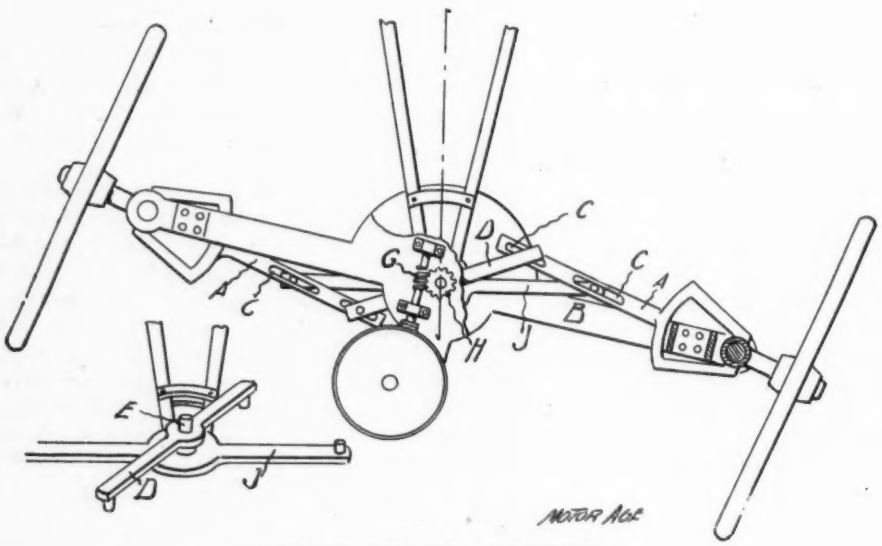
The inventor also shows modified methods of embedding the annular bands and the yokes in the tire wall, and further specifies a method whereby the in-

vention may be utilized in connection with cushion or solid rubber tires.

COLLINS' STEERING GEAR

Letters patent No. 655,853, dated August 14, 1900, to Patrick J. Collins, Scranton, Pa., assignor to the Collins Electric Vehicle Co., same place; steering mechanism for motor vehicles. Eleven claims allowed.

This inventor aims by means of bevel and worm gears and long axle arms to decrease the tendency to accidental turning of steering wheels when an obstacle on the road is encountered and to alleviate shocks and strains transmitted to the driver's hands through wheels and steering gear.



COLLINS' STEERING MECHANISM.

The wheels are mounted on stub axles hinged within steering knuckles of usual construction. Attached rigidly to the head of each stub and in alignment with the axle is an inward extension A reaching nearly to the center of the main stationary axle B. In each of these arms A are two longitudinal slots C C, one near the extremity and the other approximately midway between the inner end of the arm and the steering knuckle.

A steering arm D is mounted on a centrally located vertical axle E and has at each end a downwardly projecting pin which engages the end slot C in the axle extension A. It is obvious that by turning this steering arm D the axle may be swung to accomplish steering. The steering arm D is rotated by means of a worm G meshing with a worm gear H affixed to the vertical axle E, the said worm being turned by a bevel pinion which engages a bevel gear on the vertical shaft that carries the steering handle or wheel.

In order to facilitate the turning of the vehicle the inventor also arranges to move the main axle B relatively to the carriage body simultaneously with the movement of the wheel axles in order to give a further movement of the wheels without increasing the throw of the steering handle.

A cross piece J is rigidly attached at a right angle to the forward end of the frame reach. At each end of the cross piece is an upwardly projecting pin which engages the outer slot in the adjacent axle extension A. The pins on this cross piece being held rigidly in relation to the carriage body they form fulcrums for the steering axles. When, in turning the vehicle, the steering arm D is swung

the inner ends of the axle extensions A are forced apart and they being fulcrumed upon the end pins of the cross piece J as well as at the steering knuckles, act as levers to turn the main axle B relatively to the vehicle body in the direction desired.

HOW TO SAVE MONEY

Many a man has wasted time and money in perfecting devices that have already been perfected, only to learn, when applying for a patent, that he has been anticipated. This can be avoided, as far as motor-vehicles are concerned, by having a copy of Allen's Digest of Automobile Patents. See display advertisement on another page.

LIEBAU'S MECHANICAL HORSE

Letters patent No. 655,724, dated August 14, 1900, to John Liebau, New York city; motor truck which may be attached to any vehicle. Two claims allowed.

This invention consists simply of a three-wheeled tractor whose body carries a suitable motor and whose rear axle supports a round grate-like disk adapted to be secured to any ordinary form of vehicle fifth wheel by means of bolt clips. The steering wheel is mounted similarly to the front wheel of a bicycle and the steering handle is supposed to be in such a position that it may be readily operated by a driver occupying in the front seat of the vehicle to which the tractor is applied.

BEFORE APPLYING FOR PATENTS

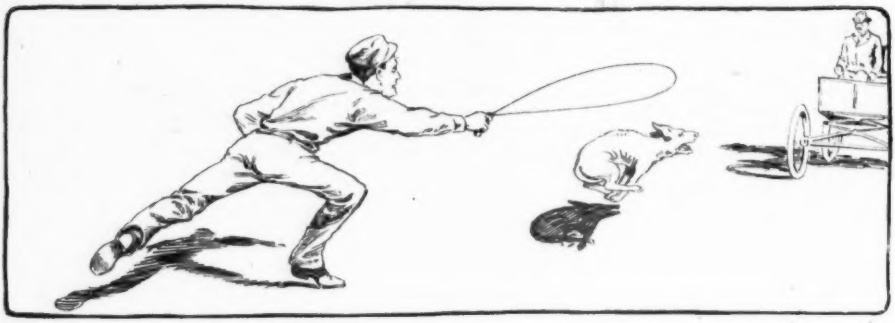
Mechanical men, before applying for patents on any device applicable to motor-vehicles, will save a world of trouble, and, in many cases, a deal of money, by being provided with a copy of Allen's Digest of Automobile Patents, an exhaustive history of all patents up to July 1, 1899. With the weekly supplements, this digest is kept constantly up to date. For further particulars, see display advertisement.

SOLID RUBBER TIRE

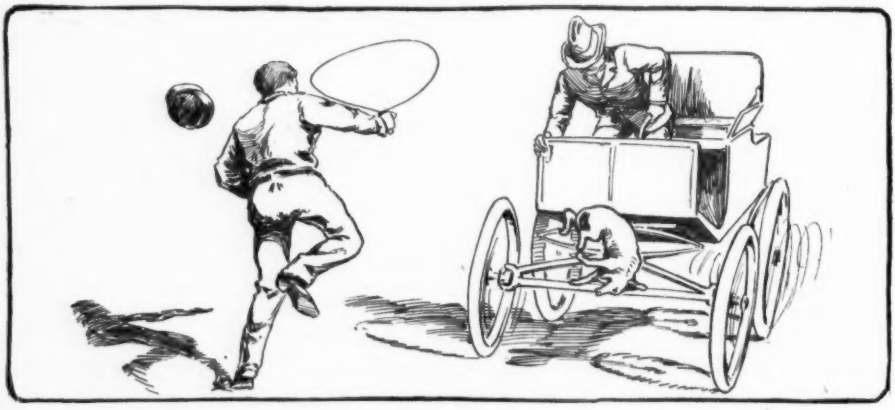
Letters patent No. 655,709, dated August 14, 1900, to Frank M., John S. and William W. Hilton and Robert M. Merriman, Akron, O.; rubber vehicle tire. Three claims allowed.

The tire has its inner portion of approximately wedge form in cross-section and has metallic wires, stays, or stiffeners transversely embedded therein at intervals, these stays being crimped, a channel-iron fitted to the rim and forming a seat for the tire, one wall of the channel-iron having an inturned flange, and a binding-wire co-operating with the other wall of the channel-iron secures the tire when in position.

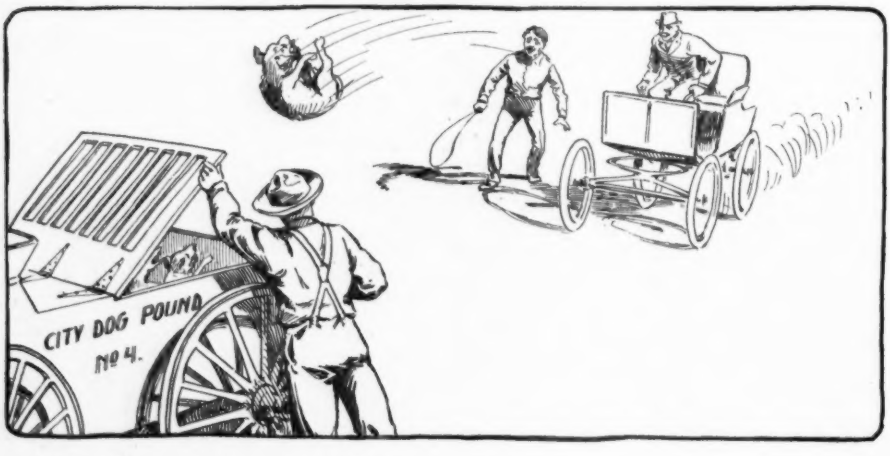
AN UNEXPECTED ASSISTANT



"Blank you, I'll get you if I have to chase you into the next ward."



"Confound that automo! Now I never will get him."



But he did.

CONSTRUCTION OF A GASOLINE MOTOR

THE FIRST OF A SERIES OF ARTICLES ON THE PRACTICAL CONSTRUCTION OF A FOUR-HORSE-POWER AUTOMOBILE GASOLENE MOTOR WITH TWO OPPOSED CYLINDERS, ACCOMPANIED BY WORKING DRAWINGS.

BY L. ELLIOTT BROOKES

[After perusing several so-called practical descriptions of the construction of an automobile hydrocarbon motor, and finding them all either unmechanical, impractical of construction or too expensive, or all three, the editor of The Motor Age made arrangements for the present series of articles by a practical automobile builder. They will comprise a description of the construction of an inexpensive balanced motor of sufficient power for a light vehicle. The description will be accompanied by working drawings, and will include all the information necessary to the construction of the motor. The motor described has been built and has demonstrated that it is practical. The series of articles will be completed in six weeks.—Ed.]

PART I.

A motor similar in most respects to the one about to be described and illustrated in this series of articles by complete working drawings, has been recently built by the writer and has been operated in a vehicle with excellent results. The only reason for not giving the construction exactly as it exists in the motor in question, is for the sake of cheapening the cost of construction and of simplifying the working parts. It was found from the shop costs, that some of the parts which appeared very simple in the drawings, cost almost twice as much to make as those in the present style of construction which appeared the more complicated on paper. The result of the writer's experience with different types of motors, has led to the conclusion that the opposed cylinder type of motor, having pistons moving simultaneously in opposite directions gives excellent results as to speed, almost absolute freedom from vibration, and the least wear and tear on the working parts of any type of motor yet constructed.

There are numerous types of gasoline motors at present in use, among which are:

The single-cylinder motor.

The two-cylinder motor, with cylinders side by side. This type is subdivided into those which have cranks 180 degrees apart, and those in which the pistons and connecting rods are attached to the same crank-pin. The first of these two has its pistons moving in opposite directions and has two consecutive impulses, viz., one right after the other, and then two idle strokes of the pistons; the second type has its pistons moving in the same direction at the same time, but receives an impulse at every second stroke and consequently has only one idle stroke of the piston between the impulses.

The two-cylinder motors of these types are to be preferred in any case to a single cylinder motor, as the vibration is less on account of their having two smaller impulses instead of one big one to give up the same power, thus helping the steady running of the motor. The weight of the flywheel in these types of motors need only be about one-half that required for a single cylinder motor, but the total weight of the motors will be about the same for the same horsepower.

The opposed-cylinder type of motor, which has the cylinders on opposite ends of a crank case or chamber which is common to both cylinders, has again two styles with exactly reversed conditions to the side-by-side-cylinder type of motor, viz., the opposed cylinder motor with crank pins 180 degrees apart can have an impulse at every other stroke or one during each revolution of the crank shaft, while the one with both pistons and connecting rods on one crank pin, has two consecutive impulses and two idle strokes, that is two impulses during one revolution of the crank shaft and none during the next revolution.

The opposed-cylinder type of motor with crank pins 180 degrees apart, can also be made to have two impulses during the same stroke, and then three idle

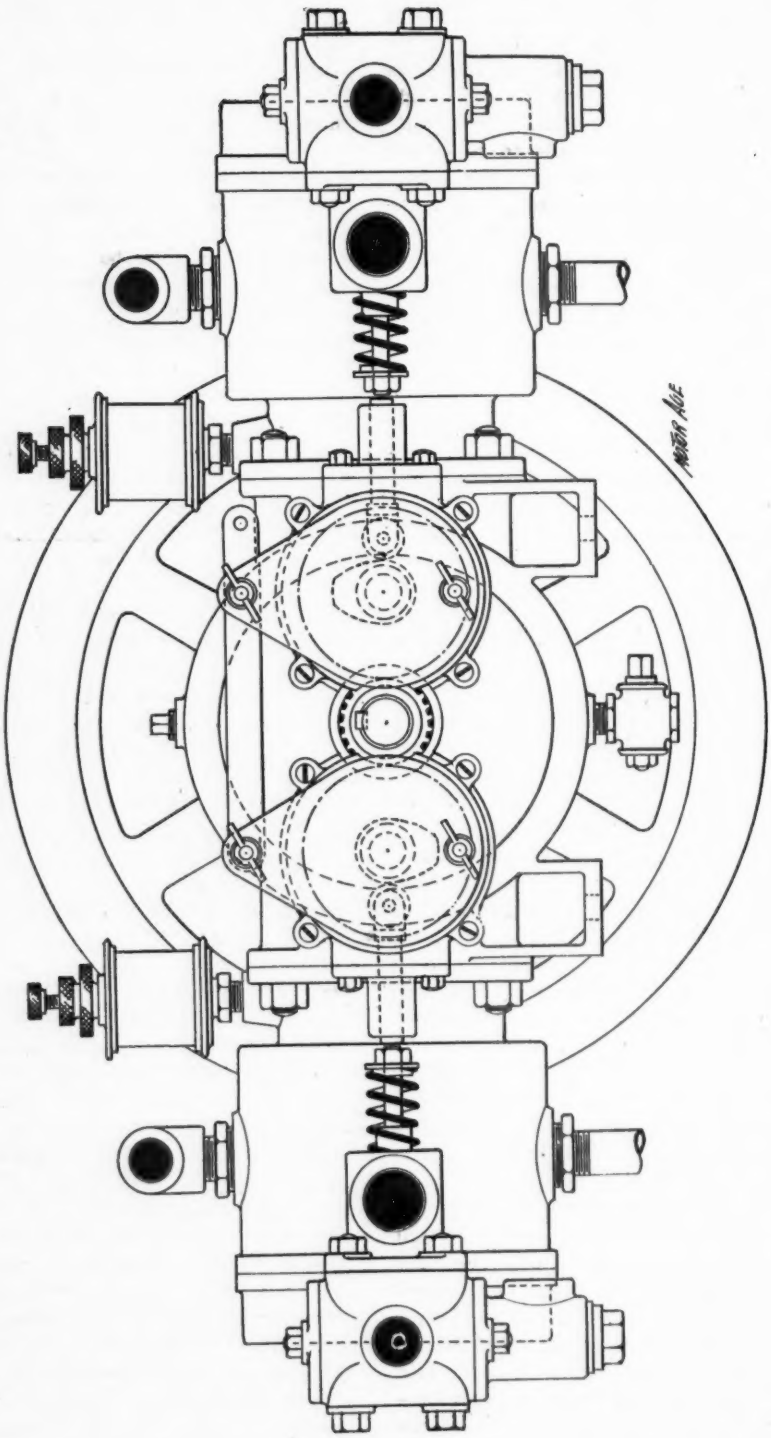


FIG. 1.—SIDE ELEVATION, SPARKING PLUGS AND CARBURETTING DEVICE OMITTED.

strokes as shown by the table which follows, but this method of operation will not give as satisfactory results in vehicle operation as the other two methods, as it is practically the operation of a single cylinder motor, and it has been the writer's experience, that, while there should be a perfect balance under these conditions, if the ignition timing devices are not set absolutely alike—and it is almost an impossibility to set and keep them in that condition, for any length of time—there is tendency to a vertical vibration or uplifting of the motor, as well as a very disagreeable longitudinal effort of the same kind. Just why this state of affairs should exist the writer does not know, but other people have had the same experience, he has been informed. But the most satisfactory method is, by all means, the one before described, having an impulse for each revolution of the crank shaft and it is to be preferred to any other form and is the one to be hereafter described in detail.

The accompanying table shows the operation of cycles of these different types of motors plainly. It has not been thought expedient or necessary to discuss any other form or type than the two-cylinder motors, as it is the limit of the scope of these articles, which are intended to describe a practical working two-cylinder gasoline motor for use in an automobile.

The type of side-by-side, two-cylinder motor with pistons and connecting rods attached to one common crank pin, will vibrate more than the 180 degree crank pin type of side-by-side, two-cylinder motor, when running light, but behaves remarkably better, under a load, than the 180-degree crank-pin type, on account of the more even distribution of the impulses or working strokes.

The opposed-cylinder type of motor with piston and connecting rods attached to the same crank pin, vibrates very much when running light, and quite considerably under a light load, more especially if placed crosswise in the vehicle, as is sometimes done. No attempt has been or will be made to discuss the cause of these objectionable features in these different constructions, but the type of motor with opposed cylinders and crank pins at 180 degrees apart, will remove all these features, and so no time will be wasted in their further discussion, save to take into account the fact that the last named type of motor will run under any or all conditions, light or loaded, and is almost vibrationless, on account of the working parts balancing each other for all practical purposes, and also having its impulse distributed uniformly every second stroke, leaving noth ng to be desired in the way of a smooth running motor.

This type of motor is a little more ex-

TABLE SHOWING CYCLE OF OPERATION OF ONE AND TWO-CYLINDER MOTORS:

Two cylinders side by side with two crank pins 180° apart.	1	2	3	4	1	2	3	4	Two cylinders opposed type with one crank pin for both conn. rods.
	ADM.	COMP.	**EXP.**	EXH.	ADM.	COMP	**EXP.**	EXH.	
	EXH.	ADM.	COMP	**EXP.**	EXH	ADM.	COMP.	**EXP.**	
Two cylinders side by side with one crank pin for both conn. rods.	1	2	3	4	1	2	3	4	Two cylinders opposed type with two crank pins 180° apart.
	ADM.	COMP.	**EXP.**	EXH.	ADM.	COMP.	**EXP.**	EXH.	
	EXP.	EXH.	ADM.	COMP.	**EXP.**	EXH.	ADM.	COMP.	
One cylinder single crank.	1	2	3	4	1	2	3	4	Above with simultaneous explosions.
	ADM.	COMP.	**EXP**	EXH.	ADM.	COMP.	**EXP.**	EXH.	

ADM.—Admission.
COMP.—Compression.
EXP.—Explosion.
EXH.—Exhaust.

NOTE: Heavy characters denote the working strokes, or stroke in which an explosion occurs; figures indicate the number of cycles in one complete operation of each cylinder. This table is only to show the relative places occupied by the explosions in each type.

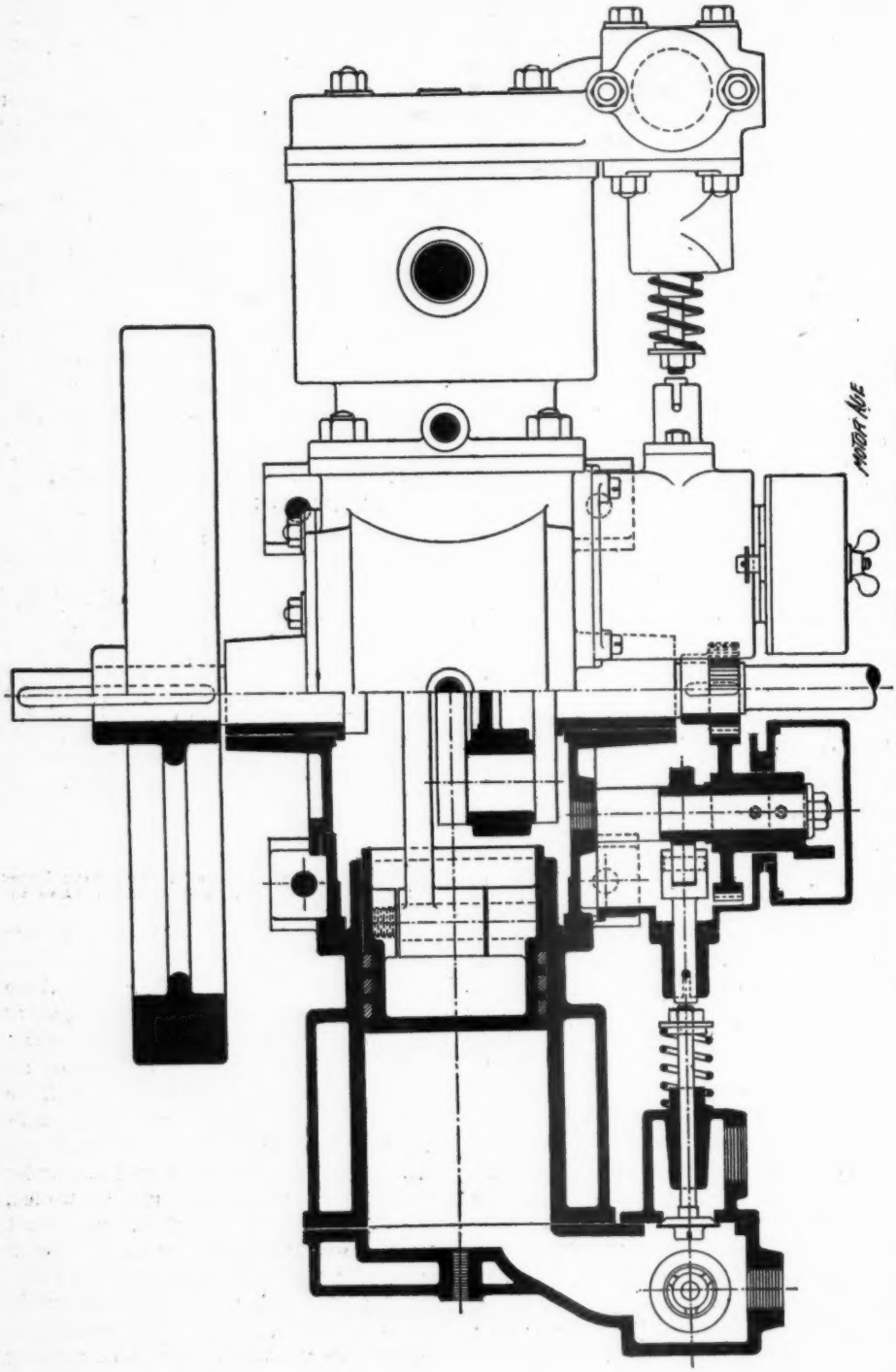


FIG. 2.—PLAN VIEW, HALF IN SECTION AND HALF FULL TOP VIEW.

pensive to build than a single-cylinder motor of the same power, or even the side-by-side type of double-cylinder motor. But this extra expense will be more than repaid by the satisfaction of having a perfectly balanced motor, and one which will have less wear and tear on its working parts than almost any other style.

The motor here shown has two cylinders, each 4-inch bore by 4-inch stroke, placed so that the axes of the respective cylinders are in perfect alignment with each other—so that the two cylinders could really form parts of one continuous tube, not being offset as is usually the case with this style of motor.

This motor will run at a speed of from 360 to 480 revolutions per minute under a full load, and from 360 to 540 revolutions per minute under a light load. At 480 revolutions per minute the motor will give four brake horsepower, which is ample for a light vehicle weighing not over 700 to 800 pounds, including the weight of the motor, with suitable gearing and will take this rig along at a gait of from fifteen to eighteen miles per hour on a good level road.

Don't let anybody tell you that he has a 2½-horsepower motor with which he can propel a vehicle of the above weight at any such speed, although he will probably claim thirty miles an hour, at least.

The ignition device used on this motor is of the form known as the jump spark, although any other form may be used, if so desired, but this form is shown and used by the writer in preference to any other, and will give the most satisfactory results if given ordinary attention and care.

The only thing which will need any close attention is the ignition plug, which occasionally has to be taken out and the points cleaned with a little fine sand paper or emery cloth, which is easily and quickly done. Aside from this the contact maker and cam need an occasional wiping to free them from oil or dust which may have gotten upon them, but this is only the work of a few seconds, and neither operation requires the attendance of an expert machinist or operator, as in the case of some of the forms of wipe and end-on contact igniters when they get out of order.

The writer has found from actual experience, that, with the wipe spark or end-on contact form of electrical ignition, while they give a good spark, when the motor is first started up, the quality of the spark falls off very rapidly on account of the intense heat which is generated within the cylinder. This affects the action of the working parts connected with these forms of ignition, and involving, as they do, the use of springs, these, even when made from the best steel and oil tempered, will very soon give out when subject to such a temperature.

There are several points to be noted in the construction of the motor in question. First, the drawings must be closely followed, and next, the material and the workmanship must be of the best to give good results; if these points are closely adhered to, a first class motor will be the result, and one that is satisfactory and will do all that is claimed for it.

Three views are shown of the complete motor, so as to give the builder an idea of what he is about to undertake and to give him a clear insight into its construction.

Fig. 1 shows a side elevation of the motor. The sparking plugs and the carburetting device are omitted for the sake of clearness, but will be shown fully in every detail later.

Fig. 2 is a plan view of the motor, half in section and half full top view. From this view a clear idea can be obtained of the work in hand.

Fig. 3 is an end elevation of the motor, showing the cylinder cover and explosion chamber in full.

These figures are one-fourth actual size.

This motor has a different means of support from any the writer has seen, in that it stands upon feet forming part of the crank chamber, and in this manner is entirely self-supporting and free from any external strains which may be brought to bear upon it by any other

method of construction. Some of these have the motor suspended by studs in the top of the cylinder and a support at the end of the crank chamber; others are supported by the cylinder heads, and some are slung in straps from the carriage frame, or hung in the vehicle body in this manner, which methods, while they fill the bill, should be avoided, if possible, as the motor has of itself enough strains to take care of, both internally and externally, resulting from its own work, without subjecting it to other and unnecessary strains.

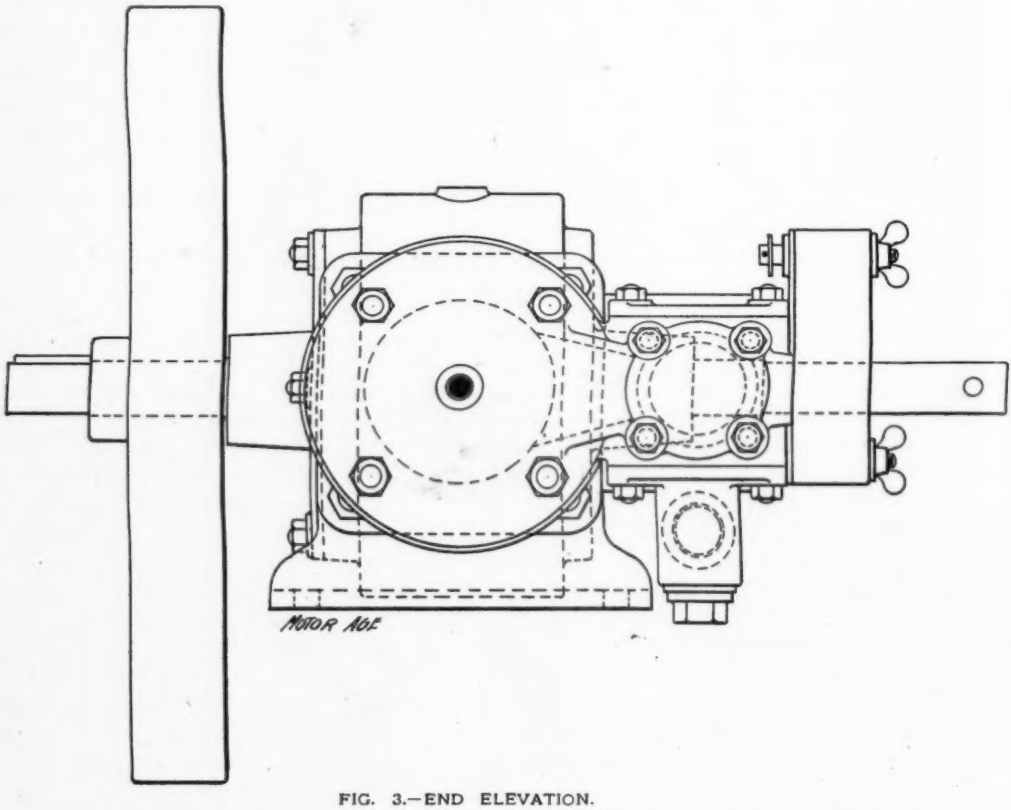


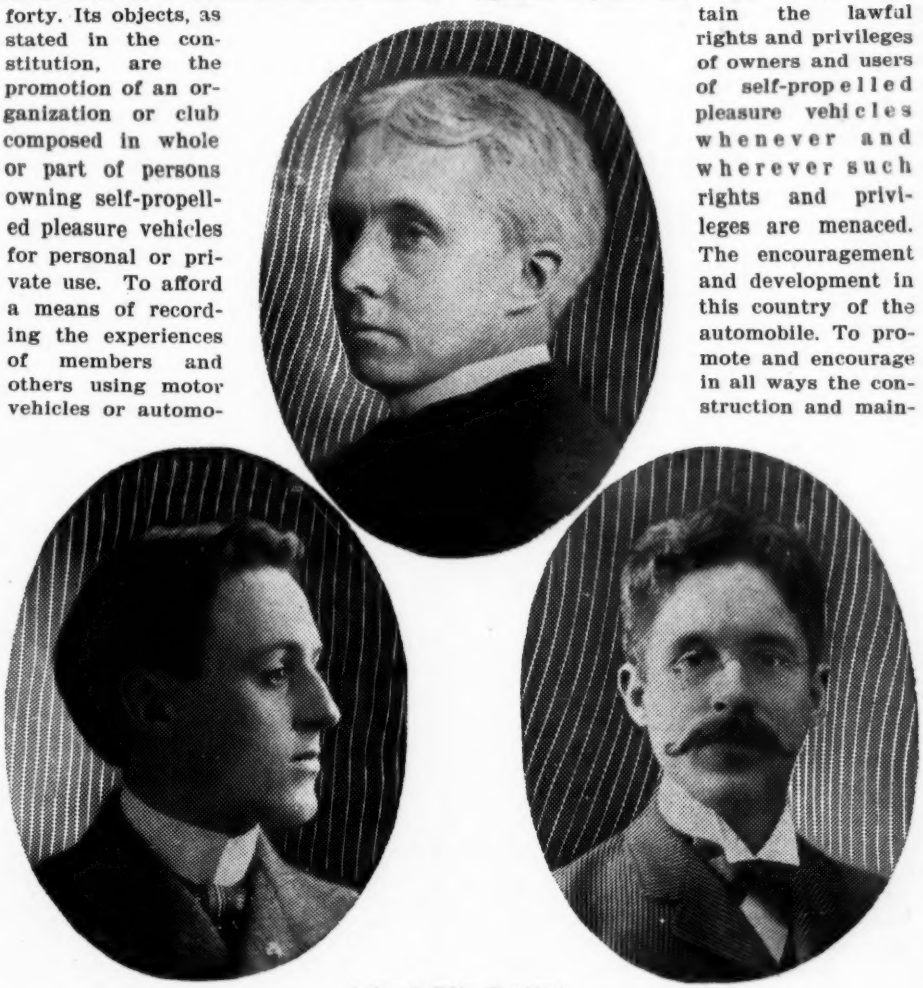
FIG. 3.—END ELEVATION.

The admission valves are shown located underneath the explosion or combustion chambers, but may be placed on top, if so desired, but the writer would not advocate it, preferring the construction as shown in Figs. 1 and 3, for the reason that the valve springs are doing only the work they are intended to do in this position, and do not have to support the weight of the valve in addition. While in the inverted position they will have to hold up the weight of the valve, and be capable of lifting it up quickly also; the result of this is that, the valve spring being light, as it should be for an atmospherically operated valve, it will only be a short time before it becomes unfit for use. On the other hand, if made stiff enough to do this double duty, when the motor is running at full speed, the incoming charge will be throttled and the motor will not develop its full power. Further, the writer has seen valves so hung—that is, upside down—where the motor had not been in use for some time, with the valves away from their seats, caused by the giving away of the valve springs from the constant weight imposed upon them while standing idle.

This is especially so in small motors, as the springs have to be delicate to get any results at all at the high speed at which such small motors are run.

THE CHICAGO AUTOMOBILE CLUB

The Chicago Automobile Club has been organized with thirty-three members and already enough more applications have been received to swell the active list to forty. Its objects, as stated in the constitution, are the promotion of an organization or club composed in whole or part of persons owning self-propelled pleasure vehicles for personal or private use. To afford a means of recording the experiences of members and others using motor vehicles or automobiles. To promote original investigation in the development of motor carriages. To co-operate in securing rational legislation and the formation of proper rules and regulations governing the use of automobiles in city and country, and to protect the interests of owners and users of automobiles against unjust legislation, and to maintain the lawful rights and privileges of owners and users of self-propelled pleasure vehicles whenever and wherever such rights and privileges are menaced. The encouragement and development in this country of the automobile. To promote and encourage in all ways the construction and maintenance of good roads and the improvement of existing highways, and generally to maintain a social club devoted to automobilism.



Arthur J. Eddy, President.

Charles T. Jeffery, Secretary. Dr. D. Cottrell, Treasurer.

OFFICERS OF THE CHICAGO AUTOMOBILE CLUB.

It is to be essentially a members' club

supported by members' subscriptions, and not carried on for profit.

The membership is to comprise four classes, viz.: Honorary, advisory, active and associate members.

The honorary membership is limited to twenty-five and will include, ex-officio: The President of the United States; the Governor of Illinois; the Mayor of the city of Chicago.

The advisory members are limited to five and include, ex officio, the Commissioner of Public Works and the members of the Board of Examination for the issuance of licenses to operate automobiles in Chicago.

The active membership is limited to four hundred.

The associate membership is unlimited in number.

The general management of the affairs and property of the club will be vested in a board of nine directors to be selected at the next meeting. The president, first vice-president and secretary are to be ex-officio members of the board.

All officers must, at the time of their election, be the owners of automobiles.

Following is a list of officers elected for the ensuing year: president, Arthur J. Eddy; first vice-president, J. Ogden Armour; second vice-president, Samuel Insull; third vice-president, F. C. Donald; secretary, Charles T. Jeffery; treasurer, D. Cottrell, M. D.; consulting mechanical engineer, to be elected; consulting electrical engineer, to be elected.

The club was first organized as the Western Automobile Association, the initial meeting being held July 27. Last December the Automobile Club of Chicago was incorporated, but it failed to meet the expectations of its promoters. Its organizers, though among the most enthusiastic devotees of automobilism, were too actively engaged in business to spare the necessary time to push the club to the front and it remained an organization in name only. Its members have all joined the new club and at the last meeting of the W. A. A., August 10, Andrew R. Sheriff, secretary of the Automobile Club of Chicago, presented the charter of his club to the new body. The name has been changed to the Chicago Automobile Club and it will go down in history as the first automobile club of Chicago.

The officers of the C. A. C. are among the pioneers of the west. President Eddy, who is proud of the distinction of holding license No. 1, issued by the City of Chicago, to the operators of automobiles, was formerly a great lover of horse flesh. Now he has entirely given up the "hay" motor for the iron lunged steed and has several of the most approved patterns in his stable.

Secretary Jeffery holds city license No. 7. Last winter he imported one of the Panhard-Levassor racing machines from France, but after a thorough trial became convinced it was not what he wanted and shipped it back to Europe. Mr. Jeffery is now using a machine made by the Gormully & Jeffery Mfg. Co., who have experimented for a long time in the business.

Dr. Cottrell was the first physician to adopt the automobile into his calling.

J. E. Scully, one of the members, attracted much attention not long ago in stopping a runaway horse with the aid of his steam runabout. He raced several blocks along Jackson boulevard, overtook and captured the horse without damage to either carriage or the animal.

The club had its first outing Saturday, August 11. Sixteen machines of various sizes and makes from the big electric mail brake to the little gas voiturette that dodged around on three wheels, were in line. The run was about twenty-five miles long and was very successful in every way. It was a "stag" affair, as the members were a little uncertain as to the outcome. Future runs are being planned, however, when the ladies will be invited to participate.

MOTOR VEHICLES AT THE PARIS EXPOSITION

A DESCRIPTION OF SOME OF THE VEHICLES—EXHIBITORS SEEM TO BE AFRAID TO ALLOW ANY CAREFUL EXAMINATION OF THE MECHANICAL FEATURES

To say that autocar firms have participated in the Paris Exhibition in spite of themselves, says the Autocar, would scarcely be stating more than the truth in the case of the majority of makers who have been so long accustomed to have shows of their own that they seem out of their element in an exhibition which provides so many other absorbing attractions for the visitor. People usually go to the World's Fair for amusement and not with the idea of doing business, and manufacturers can hardly expect that the results will compensate them for the heavy expense of renting stands and having men in attendance for more than half the year. It is certainly a good advertisement, which may have a distinct commercial value, especially in the case of those firms who may become the happy possessors of diplomas, but with such a big display it is to be feared that a good many of them will be disappointed.

Show Larger than Expected

The show on the Champ de Mars is much larger than could have been expected when it was reported that autocars were to be included in the "means of transport," in company with bicycles and carriages, and when makers were so indignant at this classification that they at first talked of abstaining altogether. Fortunately, they did not carry out their threat of withdrawing, and the show in the civil engineering palace, with the retrospective display of autocars, some of them dating back a quarter of a century, is very interesting.

Great Secrecy About Vehicles

There is much that is new to be seen if only the visitor can have an opportunity of inspecting the cars, but the makers seem to have put them there merely for an external view, and should the visitor perform the extraordinary feat of running an attendant to ground he will find him very loquacious as to the merits of the car, but either dumb or in blissful ignorance as to the details of construction. It is almost useless to argue with them that purchasers are not likely to buy a "pig in a poke," and that if they are going to pay a big price for the car they must know something about the works. The representative of one leading firm even informed us that they were not displaying their latest types, and in reply to an enquiry why they did not do so said that they were not likely to show their best things in an exhibition. The foreign visitor who asks more than the attendant is disposed to tell him is looked upon as if he were trying to spy out the secrets of the French autocar industry. There are some progressive makers who see that it is to their interest to take the public into their confidence, and who do not attempt to create a false sense of exclusiveness by wrapping their cars in mystery, but these are at present in the minority.

At Vincennes Annex

At the Vincennes annex about 400 cars were entered, though a good many of the stands are still empty, and on the Champ de Mars there are probably not far short of 100 vehicles. As each maker does not show more than three or four cars, and a good many only one, some idea may be gained of the vast extent of the industry, and the rapidity with which it has grown during the past two or three years. At the last Tuileries show it was supposed that the makers had established a record, but the display at the exhibition eclipses everything. And not only is the show a remarkably good one, but it arouses a great deal of interest among visitors who are continually around the stands. Autocars enter so thoroughly into the existence of the Parisian, who sees them in constant use as racing and touring cars, public cabs and omnibuses, steam cars and goods delivery vans, that

everything new has a powerful attraction. It is seen that the autocar has come to stay in all the different services in which it is employed, and everyone is interested in knowing what further improvements are being carried out.

It is a pity that nothing has been done to revive the lectures which proved so popular at the Tuileries show when Comte de Chasseloup-Loubat, M. Hospitalier, M. Jeantaud, and other experts visited the stands with a band of followers and illustrated their lectures by pointing out the features of the cars exhibited. But perhaps the makers object to having the secrets of their cars disclosed.

A Pioneer Constructor

M. Cambier, of Lille, has for a long time past been identified with the autocar industry, and built his first car at a moment when the enormous possibilities of the self-propelled carriage movement were still hidden from the general public. If our recollections do not betray us his first car was propelled by a Benz motor, or at least the resemblance was so close as to make it easily mistaken for a Benz, and the experimental vehicle ran so well that M. Cambier decided to utilize his facilities as a constructive engineer for the manufacture of autocars. With the aid of a few friends interested in the industry, he founded the concern Cambier et Cie., and was able to build new shops equipped with the most modern machine tools, and as the result of these extensions he is now employing about 250 hands.

Cambier An Exhibitor

M. Cambier has exhibited at all the autocar shows, but though he is such an active member of the industry he has never forced himself into prominence, for the simple reason that he was probably the first to see that a great field lay open for a cheap, simple, and reliable car, and he has consistently confined himself to this field instead of attempting to rival other firms in the building of costly racing cars. So far as we are aware he also initiated the system of constructing the cars in series, with all the parts interchangeable, so that an owner can get any exchange piece without loss of time by making known his requirements at the works or depots. Every part of the carriage is manufactured at the factory, of which the capacity is 300 cars a year.

Details of the Display

The firm exhibit three vehicles on the Champ de Mars—an omnibus, a cab, and a coupe. The omnibus carries six persons, including the driver, and is geared for four speeds up to fifty kilometers (thirty-one miles) an hour. The motor develops eight horsepower and weighs, with the fly wheel, 250 kilograms (550 pounds). It is a horizontal engine with two cylinders, though other types are built with one, three, and four cylinders, according to the power required. There are two inlet valves for each cylinder to allow of their being given a small diameter and thus facilitate cooling. Cams for operating the exhaust valves are dispensed with on the ground that they are a source of shocks and noise, and are replaced by rods and levers working on tappets which open and close the valves at the desired moment. All the parts are lubricated automatically, this being done in the case of the motorshaft by means of a chain running in an oil bath and bringing up the lubricant into the bearings.

Various Power Transmission

The method of transmitting power varies with the different types of cars, some having belts and others spur wheel gears, these also being employed chiefly for the change speed, but in the case of the six-horsepower coupe, belts and pulleys are used exclusively. The cars have an inclined steering wheel, upon which are fixed the taps, etc., regulating the admission, and the lever is in a handy position for throwing the motor in and out of gear. The eight-horsepower cab derives its name from the resemblance of the forepart of the car to a two-wheeler, but it has a seat behind, giving it more the appearance of a dogcart. The consumption is small if it be true that the omnibus will run forty kilometers with five litres of petrol, and the finish of the cars is beyond all reproach.

The Serpollet steam car has been so long a time coming on the market that

a good many people were disposed to think that it was a very pretty thing in theory, but hardly likely to work out well in practice. All sorts of troubles were foreshadowed over the possibility of the tubes burning, and if the generator could not be relied upon it was naturally supposed that the car could never become a success. M. Serpollet overcame any drawback that was likely to arise from this cause by the invention of his very ingenious arrangement for admitting the oil and water in the necessary proportion, so that heat was generated only at the precise moment when water was forced into the tubes. As the tubes are flattened until the shortest internal diameter is not more than about one millimeter (.039 inch), it was urged that they were liable to be clogged by scale, but the experience of the past twelvemonth or so has shown that the generator scarcely ever requires any cleaning. It is found that any deposit of scale is prevented by the rapid circulation of water and the variation in the temperature, while a further safeguard is provided by adding a very small quantity of oil.

Employing American Capital

Having demonstrated the thorough reliability of his car, M. Serpollet embarked upon the construction of these vehicles in association with an American capitalist, Mr. Gardner, and the firm of Gardner-Serpollet, 9 and 11, Rue Stendhal, Paris, are now beginning to turn out these vehicles in considerable numbers. They show three cars—a light vehicle with a five-horsepower engine, an eight-horsepower victoria, and a ten-horsepower car with seats for four persons. This last named car is very nicely finished off in pale green, and is a particularly attractive vehicle. The propelling mechanism is the same as that which was exhibited at the last Tuileries show.

Description of Serpollet Boiler

As is well known, the generator is of the flash type, the tubes being bent U shape for the sake of rigidity, and is fired with heavy oils by means of a Bunsen burner. The tubes can never be heated to such a point as to deteriorate the metal, as the intensity of the flame is regulated by the quantity of steam to be generated. The motor has four simple expansion cylinders, which are arranged in pairs at an angle of forty-five degrees. The arrangement is much the same as that of the hydrocarbon motor, in so far as concerns the valves, and this allows of the suppression of sliding valves and stuffing boxes, which are frequently a source of trouble on steam road cars. Steam can be cut off at any part of the course. Power is transmitted by spur wheel gearing to a countershaft, which is arranged for high and low speeds.

Variable Fuel and Water Feed

One of the most interesting things about this car is the proportionate feed already referred to. This is composed of two pumps, of which the ends of the plungers are hinged onto a lever, and the lever itself is operated by a series of cams of different dimensions. By a simple adjustment of the cams with a hand lever the stroke of the two pumps can be varied as desired, but at the same time, while a considerable variation can be given to the quantity of oil and water admitted into the burner and generator, the two are always kept at exactly the same ratio.

Other Mechanical Features

All the mechanism is carried on a framework of channel steel, and above the underframe is a cylindrical fuel tank, in which a slight air pressure can be given by means of a hand pump. The vertical water tank is carried in front, and behind this are grouped the levers and the vertical steering rod with horizontal wheel, under which are placed two small levers—one for regulating the speed of the pump, and the other for reversing and for varying the expansion in the cylinders. By the side of the driver is a hand lever for operating the pump to start the vehicle, and also for increasing the quantity of steam generated when mounting steep gradients.

Regulation of Engine

The engine is regulated by a foot lever, which operates a valve between the generator and the motor, so that when the lever is fully depressed the valve is open, and is shut immediately the driver re-

moves his foot. In this way not only can the speed be regulated with the greatest ease, but there is absolutely no danger of the car starting by itself when there is no one aboard. It has often been urged that it must be very fatiguing to keep the foot on the pedal when driving for any length of time, but the makers claim that after the first few minutes the effort is almost imperceptible. The generator is placed at the rear of the car, one-half being below the underframe, and the upper part hidden by the carriage work.

Uses a Condenser

The exhaust from the motor passes into a receptacle containing iron shavings, which deprives the steam of any oil it may contain, and it then circulates through the condenser formed of a number of horizontal tubes underneath the forepart of the car, and the condensed water finally passes into the water tank. It is claimed that the capacity of the water and oil tanks will allow of the car running from eighty to one hundred kilometers (fifty to sixty-two miles), and that the vehicle will attain the speed of forty kilometers (twenty-five miles) an hour on the level, and will mount the steepest gradients. The consumption is about one litre of oil for six kilometers—about one gallon for fourteen miles.

Oldest Firm in the Trade

De Dietrich et Cie., of Niederbronn (Alsace) and Luneville (France), can justly lay claim to being the oldest firm engaged in the autocar trade, for their establishment dates as far back as 1685, when it was founded by Jean Dietrich. It is reasonable to suppose that the originator of these works did not at that time have any idea of constructing mechanical road carriages, and, in fact, it was not until 1898 that the company embarked upon the industry by purchasing the patents of Amedee Bollee fils for England, Germany, Austria, Belgium, and Switzerland. The works at Luneville have been equipped for building autocars, and the company are now turning out vehicles at the rate of forty a month.

On the Champ de Mars they show five cars, and are also exhibiting a number of German vehicles at the Vincennes annex. All the cars are of solid and roomy build, and are comfortably upholstered, and are likely to appeal strongly to those who are on the lookout for good and reliable pleasure vehicles. The forms of the cars are, however, distinctly novel, the makers having evidently tried to break away from the ordinary types of carriages. In the nine-horsepower car the driver is seated in a "cab" with windows in front and behind, and at the rear are four uncovered seats, two of which are removable. Another of a somewhat similar type has a sort of coach body fitted behind, and the vehicle is propelled by a twelve-horsepower engine. The firm also build waggonettes, brakes, and the well-known char-a-banc, which has always been the standard type of the De Dietrich vehicle.

Many Commendable Tests

The De Dietrich cars are perhaps less known off the continent than they ought to be, in view of their proved qualities, for they have figured honorably in most of the long-distance races which have been held in France, and have done several remarkable touring performances, among which may be mentioned the ride of MM. Thevin and Houry from Paris to St. Petersburg and back in the autumn of last year. The roads in Russia are worse than in any other civilized country, and yet the car got through the ordeal without any difficulty. One of the secrets of these successful performances is that the firm put plenty of power in their vehicles, so that there is always a reserve for getting up hills and overcoming other obstacles. It may also be mentioned that the De Dietrich lorries are reported to be doing good service in the opening up of the French Soudan. The firm build four types of motors developing six, nine, eleven, and eighteen horsepower respectively.

Description of Motors

The motor is of the two-cylinder, horizontal type, and is regulated by an ingenious form of centrifugal regulator, which operates through the medium of a toothed segment. Situated under the

forepart of the car, the motorshaft carries a fly wheel and a pulley, and power is communicated to the shaft at the rear, carrying a pulley of the same diameter, by means of a belt. It is claimed that as this belt is always running at the same speed it gives greater smoothness and regularity of running to the car, and it is obvious that this system must reduce the strains incidental to the throwing in and out of gear. This shaft carries the gear, which is arranged for four speeds and reversing, and the driving-shaft communicates power to the wheels by means of rods and bevel gears.

Have Abandoned Belt Transmission

In the newest types of car which the firm are bringing out the motor is placed in the axis of the underframe instead of being situated a little on one side to allow of room for the pulley, and the pulleys and belt are superseded by a chain connecting the motorshaft with the countershaft. Owing to the difficulty of examining the mechanism on the stand we cannot say whether this system has been adopted on the vehicles exhibited, but it is curious that the firm should have suppressed the belt, which they have always claimed to be a decided advantage, though, probably, they have found it a source of trouble like most other firms who employ belt transmission.

NEWS OF THE MOTOR INDUSTRY

TRADE NEWS OF CLEVELAND

Cleveland, Aug. 20.—Frank Lamkin, of Norwalk, Ohio, formerly a well-known racing man, has the agency for the Mobile in this portion of the state, and has opened a sales room with J. T. Graves, a prominent Euclid Avenue bicycle dealer. The establishment is opposite the Stillman Hotel and several machines are now on exhibition. The Mobile already has a good reputation in Cleveland, several of them being in use.

Mr. Kroh, of the C. Z. Kroh Co., of Toledo, well-known to the bicycle trade through the manufacture of saddles, was in the city last week showing samples of automobile leather trimmings. The Kroh company is now devoting considerable attention to this business.

Arthur Gardner, the famous Chicago racing man, was in the city last week visiting local automobile manufacturers with a view to securing a speedy steam or gasolene carriage. Gardner has given up racing and is desirous of touring through the country in a speedy machine. He believes he could make a decided hit by racing with fast horses at country fairs and race meets.

The Squires Carriage Co., a prominent carriage concern of Cleveland, has decided to enter the automobile field and is desirous of securing an agency for a successful vehicle. The majority of the other carriage dealers in this city claim to be sceptical as to the possibilities of the twentieth century vehicles.

J. F. McNutt, of Cleveland, made a fast night run to Warren, Ohio, a few evenings ago. He left Cleveland at 8 p. m. and reached his destination at 2 a. m. The distance is a trifle over ninety-five miles. The vehicle was one of the New York & Ohio Co.'s regulation, gasolene Packard carriages.

MOTOCYCLE PARTS

The E. R. Thomas Motor Co. announce that they have inaugurated a complete jobbing department through which they will furnish to the trade all parts that enter into motor cycles. A complete stock is carried of motors for bicycles and tricycles, cylinders, carburators, frames, gears, aluminum cases, sparking plugs, etc., down to the smallest screw. Almost all the parts are of their own manufacture and are in stock ready for delivery. Claiming to be the first manu-

facturers in America of the complete motor cycle, and being the first jobbers of American made parts, the E. R. Thomas Motor Co. should occupy a useful position in this branch of the supply business.

KEYSTONE COMPANY'S LATEST MODEL

Already two of the styles of "Autocycle," manufactured by the Keystone Motor Co., of Philadelphia, have been illustrated in the columns of the Motor Age. This week is shown a third style ot vehicle, built on the same general plan as the others, but provided with a seat for an extra passenger. In addition to this the company have some regular delivery wagons and some wagonettes under way. But the standard autocycle for two passengers, the parcel delivery wagon, and the present autocycle for three passengers are the types that have actually been put on the market.

The three-seated autocycle is simply a standard autocycle elongated sixteen inches, with the addition of a seat placed over the motor for the operator. The frame is made of 1½-inch steel tubing 3-16 of an inch thick. The wheels are 30 and 34-inch diameters, fitted with 2½-inch pneumatic tires. The spokes are 3-16-inch, wire laced, tangent. The rear axle is 1⅝ inches in diameter, and is carried in self adjusting bearings—insuring perfect alignment of the driving shaft at all times. The front axle has a slight movement around a king bolt in the vertical plane to compensate for the irregularities in the road and prevent any twisting or distorting of the frame.

THE KEYSTONE COMPANY'S THREE-PASSENGER AUTOCYCLE.

The motor is one of the Keystone standard 4 by 4-inch engines. This motor, according to the company, will deliver two actual horsepower at 400 revolutions per minute and four horsepower at 800 revolutions. It is completely controlled

from the driver's seat and can be speeded as desired by simply operating a small lever. The clutch and back gear mechanism are also controlled from this seat.

Two changes of gear are provided. A gear having a ratio of five to one will give a maximum speed, on good roads, of twenty miles per hour, while the hill climbing gear will give a maximum speed of six miles per hour. The machine, however, is not limited to two speeds. By manipulating the spark advancing lever the engine may be speeded or slowed down at will, and a complete range of speed may thus be obtained.

The circulating water used to cool the engine cylinder is carried in a four-gallon copper tank, and in addition, is provided a heat radiator. Water enough is carried for ten hours' continuous run. The fuel used is common sixty-six to seventy-two degree stove gasolene. When running at about twelve miles per hour, the motor delivering about two horsepower, the consumption of gasoline is two pints per hour. It is therefore possible to travel 100 miles over good roads on two gallons of gasolene at a total cost of from twenty to twenty-two cents. The tread may be made standard when desired; when not specified, however, it is always forty-eight inches, and the wheel base is fifty-four inches.

The Keystone Motor Co. say that they have been making extensive arrangements for manufacturing these vehicles, which they believe will prove as popular as their standard Autocycle.

BOUGHT BY THE BICYCLE TRUST

The determination of the American Bicycle Co.—the trust—to engage largely in the motor vehicle business is evidenced by their recent purchase of patent rights, good will, drawings, patterns, and tools, together with the one carriage that has been turned out by F. C. Billings, of Hartford, Conn., the superintendent of the Billings & Spencer Co., of that place. The purchase includes twelve patents.

The Billings carriage is a steam vehicle, into which the constructor has embodied several novel features.

The A. B. C. is already engaged in the motor-vehicle business in its Waverly plant at Indianapolis, where electric vehicles are being turned out in quantities. In addition to this, experiments have, for a long time, been carried on in the Gormully & Jeffery branch in Chicago, while several of the Lawson motor-wheel vehicles have been turned out by the Western Wheel Works branch, also in Chicago.

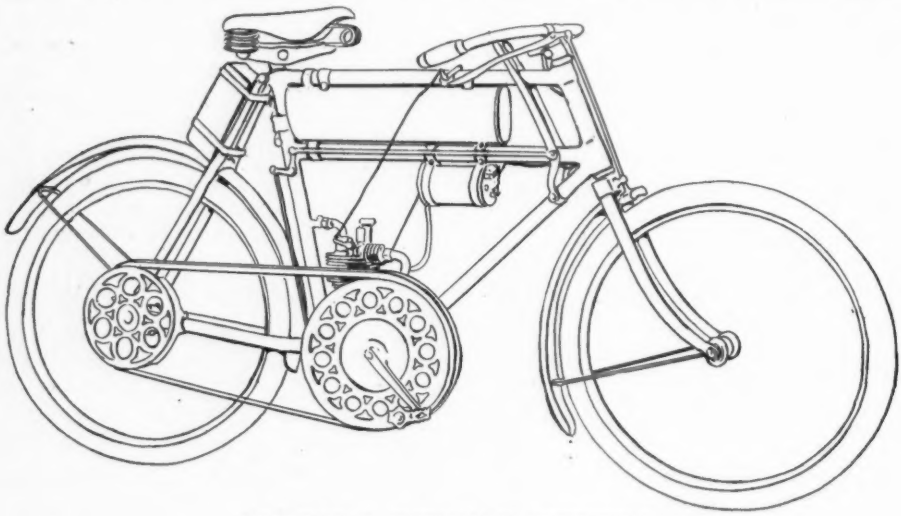
A HARROWING EXPERIENCE

Philadelphia, Aug. 20.—"Bob" McCurdy, who represents the Mobile people in this territory, has secured central quarters just across the street from the city hall, in the old gas office building at Juniper and Filbert Streets. With the entire ground floor for displaying the vehicles, and City Hall Square in which to exhibit their paces, "Bob" has hit upon an ideal location, no less than half a dozen sales being the result of the first four days' business last week—three in one day being the record.

McCurdy tells a good story concerning one of their machines which had been in collision with its owner in charge. After the mix-up the Mobile became fractious and "Bob" went out to the owner's country place to look her over. Mounting the seat and grasping the levers—it was in the barn-yard—"Bob" started ahead. "She jumped for the wall which faced the road," said he; "she wouldn't run slow—the speed gears were forney, from the collision, I guess. I couldn't bring her to a standstill, so I reversed her. Back she shot at full speed as if she had a mission to perform—that of making a hole right through her owner's barn. Again I tried to stop her. She wouldn't stop. There was nothing to do but go forward again—and so on forward and back—full speed both ways—until she got tired. At first I was a little nervous at the idea of bounding at a stone wall at a twenty-mile gait, reversing and jumping back towards the barn at a like speed. Finally I got it down so fine that I would let her get within a yard or two of the wall before I reversed her and ditto when she jumped at the barn. Then I began to reduce the margin

to feet and then to inches. At last, when I had brought the front wheels to within an inch or two of the wall, I threw her back, and just as she was humping herself for her backward jump, I threw her forward again. With but a few inches to go she didn't give the wall much of a bump, and when she touched I jumped to the ground. The owner and I stood and watched her for a while clawing up a pair of furrows with her hind legs—for all the world like a clean doggie—and then we went in and had a drink. It was a hot day, and I took seven pounds off during the fight. I sent her back to the factory next day and had her speed gear fixed up and a new pair of rear tires put on. She clawed all the rubber off the old ones while she was trying to butt that wall down."

"Bob" corresponds regularly with his old team mate, Charlie Church, who is now in the wilds of Manitoba representing an oil engine concern. Church writes that he will return to civilization in November, when he hopes to embark in the automobile business.



CHAPELLE & CHEVALLIER MOTOCYCLE.

TYPE OF FRENCH MOTOCYCLE

The accompanying illustration shows the Chapelle & Chevallier motocycle which is being exhibited at the Paris exposition. The motor used on this machine is 1½ horsepower and is fitted with a two-speed transmission device. The drive is by means of a leather belt which is stretched by a lever placed conveniently before the rider. It is said that the pulleys over which the belt runs afford sufficient adherence to effect hard driving without waste through slipping. The motor can be entirely disconnected if the rider desires to drive the machine entirely by pedaling.

The maximum speed obtainable is thirty-one miles per hour while the makers assert that with the lower speed gear all hills can be ascended, without pedaling, at an average speed of nine miles per hour.

Electric ignition is employed, a switch at the left handle-bar grip rendering the cutting off of the current very convenient. The motor is high speeded, running from 1,400 to 2,000 revolutions per minute. The carbureter is of a special type which, it is said, has proven very economical.

Seventy-seven pounds is the weight of the machine and it is sold for $200. A similar machine having but one speed gear is sold for $170.

FAILURE OF ELGIN COMPANY

The Elgin Automobile Co.. of Elgin, Ill., and Chicago, is in the hands of Arthur A. Taylor, receiver, and a number of the creditors of the company are pre-

paring to file involuntary bankruptcy proceedings. The immediate cause of the failure is a confession of judgment for $6,000 in favor of an Aurora, Ill., bank.

The company has, almost from the start, done a business that should have been profitable, but was handicapped for want of sufficient capital. Attempts were made to secure the necessary capital and promises that it would be forthcoming were several times made, only to be broken, with the result that the company has been obliged to close its doors.

NEW MACKAY STEAM CARRIAGES

Boston, Mass., Aug. 20.—Twenty-five of the new Mackay steam carriages have been turned out of the factory of the Stanley Mfg. Co. at Lawrence, Mass. They have all been built to special order and several of them have been shipped to Europe.

They are all heavily built carriages, weighing about 1,650 pounds, against 700 pounds average weight of the ordinary steam runabout. Their retail price is $1,800.

The Mackay carriages have several notable features. The gasolene tank is immersed in the water tank. The engine is simple or compound and has a superheating device.

It is announced that the Mutual Automobile Co. will manufacture motor vehicles of various types in the factory formerly occupied by the Globe Cycle Co., of Buffalo. A large concern is said to be likely to result if present plans mature.

The Enlind Mfg. Co., of Philadelphia, has been incorporated with an authorized capital stock of $1,000,000, for the purpose of manufacturing and dealing in automobiles.

The agency for the Mobile Co. of America for Brooklyn and Long Island has been placed with the Maltby Automobile & Motor Co., of 10 Clinton street, Brooklyn.

The Cycle Supply Co. of Cherokee, Ia., which has been in that line of business for seven years, expects to build several motors for bicycles during the coming winter.

A. Henry, a dealer in harness and bicycles at West Chester, Pa., writes that he expects to add motor bicycles and automobiles to his business next season.

The Waltham Mfg. Co. of Waltham, Mass., have issued a neat folder and price list, illustrating their motor bicycles.

AUTOMOBILE NOTES FROM GERMANY

Berlin, Aug. 4, 1900.—The motor exhibition at Frankfort-on-the-Main commenced with an accident that luckily turned out better than at first was feared. A visitor to the exhibition and a friend hired a motor car and drove through the town on it. On attempting to cross the Kaiser Strasse the motorist suddenly found himself jammed in between two street cars, and before it was possible to escape, the collision occurred. It sounds almost incredible, but it is a fact nevertheless that one of the inmates of the car escaped Scot free, the motorist bruised and scraped his legs very badly, besides having nasty flesh wounds on his face and neck inflicted on him, but without suffering any serious complications. The car, a perfectly new French make, was smashed to atoms. There seems to be a special guardian angel protecting automobilists.

The German cycling and automobilistic dailies are now employing the expres-

sion of "power-car" for a motor, "power-traffic" for automobilism, "power-three-wheel" for a motor-tricycle, "power-two-seats" for a motor-tandem, "power-driver" for a voiturette, and so on ad infinitum. The whole set of words is clumsy and inadequate to express the full meaning of the original words, while "power-driver" ought in reality to be used for the motorist himself, unless a new combination, such as "power-driver-guide" is set up. The Berlin police authorities are, however, fully convinced that "power-car" is the correct expression to be used and in consequence of their determination the wielders of the pen are racking what little brains the terrific heat has left them to widen out the work commenced by the "men in blue."

A Creditable Ride

Herr Emil Hasemann accomplished a very creditable performance during the Frankfort exhibition. Mounted on a "Kayser" motor-tricycle he rode from Kaiserslantern to the big motor center and took only four hours in spite of bad roads and even worse paving. His time is nineteen minutes better than that of the train connecting the towns.

At a special general meeting the Bavarian Automobile Club held in Munich on July 25, two members of the Automobile Club de France were present. These gentleman, M. Sicot, director of the Peugeot Works, and M. Roussel, secretary of the Credit Toncier, had ridden from Paris to Munich in a Peugeot car in three and a half days. On July 28 they continued their journey to Vienna, and expected to arrive there on Monday last.

Automobile Flower Corso

The Automobile Flower Corso at Frankfort on July 22 was a great success, no less than thirty vehicles taking part. The streets along which the procession passed were lined with spectators who enjoyed the sight immensely. Every make of motor car was represented, omnibuses of alarming dimensions, elegant voiturettes, brakes, motor-tricycles, with a basket-seat attached, quadricycles, avant trains, all charmingly decorated, and gay with fragrant blossoms. Herr Wilhelm Opel's voiturette, beautifully decked out with white syringa and light green foliage carried off the first prize, a golden cup; Herr Carl May's car was awarded second prize, it had a bower of flowers in which white doves nestled, the working of the motor giving to the birds a most realistic appearance. The third prize went to Herr E. W. Mather, fourth to the Hess firm, fifth to Herr Schuessler, and sixth to Herr Voss. Herr Ulrich and Dr. Isbert, whose wheel represented a boat, were awarded two special prizes.

A Duke's Accident

Duke Victor Massena de Rivoli, who is taking a course of the waters at Kreuznach, had to experience a nasty accident last week, while making an excursion with his family to the Guldenbach valley. The Duke was steering his motor-car, when the steering-rod suddenly snapped and the car which was going at a goodly speed, shot down the road into the Guldenbach, the stream that gives the valley its name. There it capsized, depositing the ducal family in the water; fortunately none of them were severely injured except the duke's step-daughter, who scraped her face badly, and they escaped with nothing more dangerous than a cold ducking and a shock. After they had collected themselves they walked to the nearest village, where they hired a conveyance to take them home, while the motor-car was carted back to Kreuznach in a sadly battered condition.

In Military Use

The motor-cars of the artillery transport corps have been sent, by order of the war office, to Alt-Grabow, where the Horse Guards are exercising, to receive the reports of the regiment and forward them to the emperor. It is also to be a trial of the utility of the vehicles on open ground.

"Die Automobile," a paper devoted to the interests of motorism, has been withdrawn from the public arena. It is rumored that several other publications will follow suit. The automobile boom last year in September was the cause of the appearance of numerous journals, most of which were doomed to die young from the day of their birth.

Fire broke out last week in the motor factory of Johann Puch, Gratz in Styria,

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A general index will enable the subscriber to turn at once to any patent he desires.

The sizes of the pages will be the same as those of the Electrical Weekly or the weekly issues of United States Patents. It will be a digest of about 1,000 patents, including reissues, trade-marks and designs, and the whole will be a volume of about 800 pages. Those desiring the work should subscribe at once as the first copies ready will be sent to previous subscribers.

U. S. Electrical and Automobile Patents.—Published weekly, compiled by James T. Allen, contains all patents for Electrical and Automobile devices as issued. Subscriptions may be made to date from July 1, 1899, thus giving the owner of Allen's Digest of Automobile Patents every patent issued up to date, and kept up to date. Subscription $10 per year, in advance (twenty cents a week).

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THE MOTOR AGE

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and the flames spread with such rapidity, that the whole place was burning within an incredibly short time. The hands, about 200 in all, quickly rendered first and most valuable aid, and on the arrival of the fire brigade the fire was quenched after a damage of about 8,000 to 10,000 kronen had been done. Herr Rosner, the director of the factory, prevented a fearful explosion by closing the benzine reservoir of an automobile that was ready for transport, and it is a curious fact that although the flames destroyed the vehicle down to its very frame-work, the benzine reservoir, containing about twenty litres, which had been hermetically sealed up, remained perfectly intact. Herr Rosner paid for his bravery in plunging through the fire to get to the car by some ugly burns.

Nuremberg Show a Failure

The Nuremberg Automobile show closed with a big deficit and has caused no end of jealousy in the ranks of the exhibitors and even among the competitors in the exhibition rides and motor races, who are haggling among themselves individually and against the different juries in a body. Further developments are unavoidable in the present state of affairs. These are but the almost universal consequences of shows in Germany and the organizers of such undertakings are either case-hardened mortals or members of that category that rushes in madly where angels do not venture to tread.

The Bavarian home office has refused to grant a permit for the automobile service between Garmisch, Partenkirchen, and Scharnitz, which was about to be instituted.

Automobile Congress

The German Automobile Association is issuing invitations for its first congress on August 29 in Berlin. The members and guests meet at half-past eleven in the club rooms of the German Automobile Club, 4 Sommer Strasse, Berlin, where lunch will be served. The business part commences at three o'clock in the afternoon, several gentlemen having agreed to address the meeting on points of vital importance. On the following morning the start of the Berlin-Aix-la-Chapelle race will be witnessed from the Kurfuerstendamm gate of the Zoological Gardens, and at ten o'clock the association committee meets in secret conference. Surely we are not wasting any time in Germany, for event presses on event in the automobile world, and no sooner is one road race over than the programme is out for another. Even the Allgemeiner Radfalhrers Union, a corporation for the furtherance of touring, had a motor road race in honor of its fifteenth congress at Strassburg on July 22.

Inconsequential Exhibit

The permanent automobile exhibition at Berlin which was to have opened early in July, is no better than any other exhibition, for although the month of July has drawn to a close, the show has not yet been made public property. However, we live in hopes.

The United States consul general at Frankfort-on-the-Maine has joined the Frankfort Automobile Club and has been appointed a member of the honorary committee of the exhibition.

Fun With an American Term

The German papers have made a good deal of copy out of the latest American idiom for motoring "to go bubbling" and are giving lengthy translations of the literal meaning of the phrase.

MISCELLANEOUS

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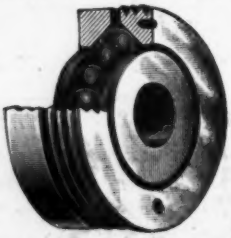

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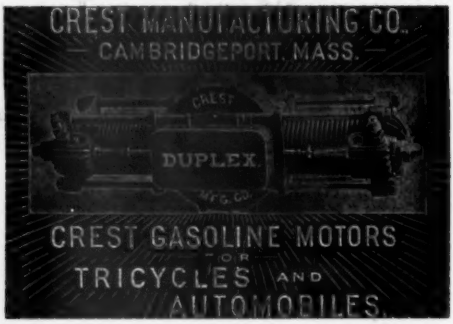

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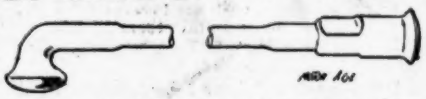

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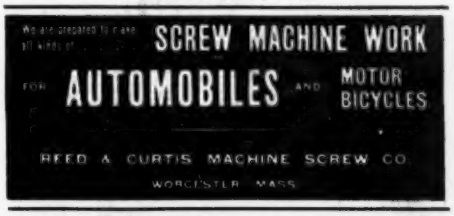

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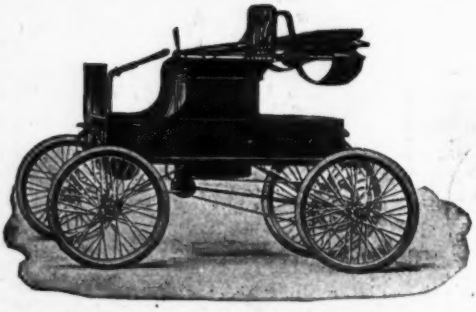

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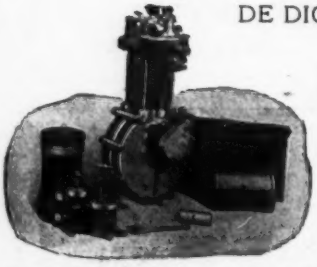

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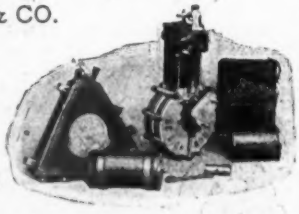

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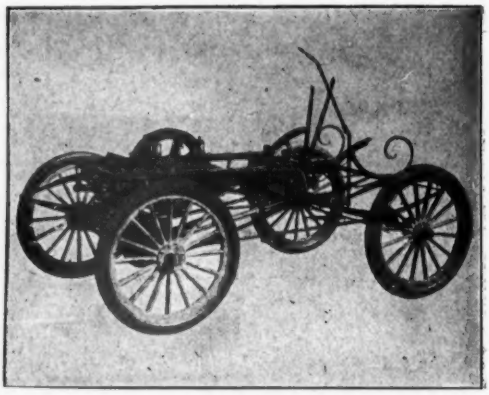

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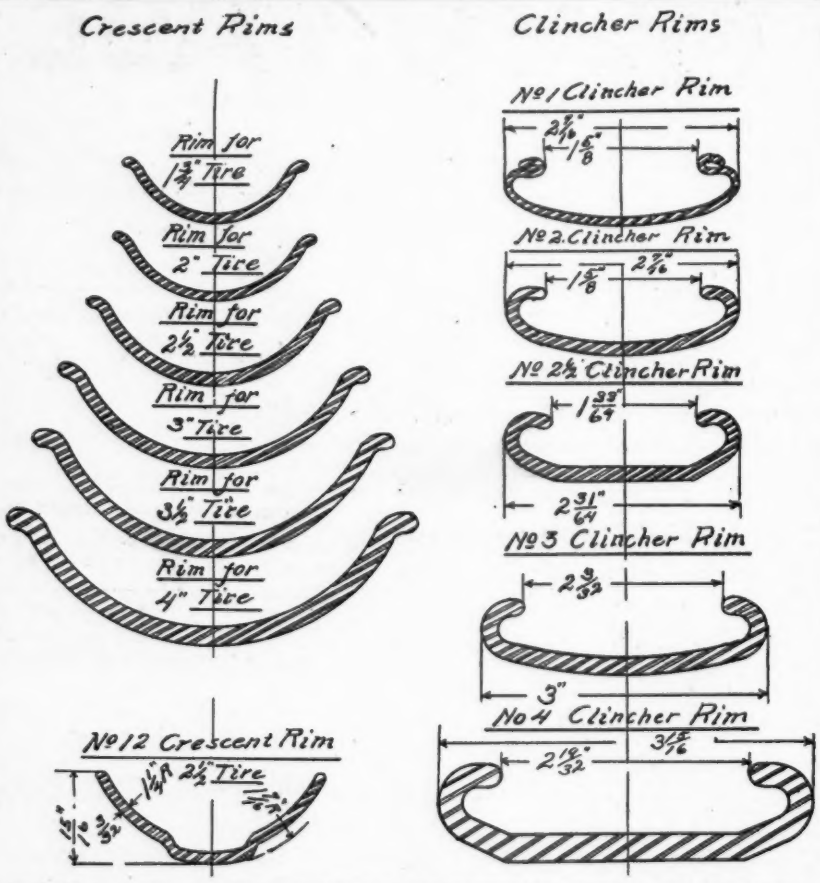

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